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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,687

03/31/2004

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02/15/2006

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EXAMINER

NGUYEN, HUNG

ART UNIT

PAPER NUMBER

2851

DATE MAILED: 02/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/813,687

Applicant(s)

TINNEMANS ET AL.

Examiner

Hung Henry V. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 11-14, 19, 20 and 22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 15-18 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-22 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/05:11/04</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Election/Restrictions***

1. Applicant's election with traverse of group I (claims 1-10, 15-18 and 21) in the reply filed on 12/13/2005 is acknowledged. The traversal is on the ground(s) that "the search and examination of the entire application can be made without serious burden and the criteria for a proper restriction requirement set forth in MPEP §803. Applicant states that the subject matter of all groups are sufficiently related that a through search and examination of any one group would necessarily encompass the search and examination of the remaining groups and all group are classified in the same general classification: class 355 and 361. This is not found persuasive because as clearly demonstrated in the Restriction requirement sent November 29, 2005, while group I is related to a robot arm having a rod and compliant structure for supporting and compensating a tilt between the substrate and a clamp; group II is explicitly related to a Johnson-Raybeck type clamp with an oxidizer layer where the clamp is connected to an AC controller for minimizing the temperature change of the substrate due to the clamping current; group III is specifically drawn to a lithographic support structure having a Johnson-Raybeck effect type clamp connected to a DC and AC power supply controllers for controlling the time of clamping and de-clamping of an object and group IV is related to a method of cleaning of a substrate holder. As such, the distinct and separate searches are quite extensive and place a serious burden on the Examiner in regard to *both search and examination* (emphasis applied). The fact that each group is classified in separate class and subclass demonstrated that the groups have separate status in the art and are, therefore independent. Fact that "all groups are classified in the same general classification, class 355 and 361" does not mean that only class 355 and class 361

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will be the only two classes searched. Therefore, there is no showing that the burden to the Examiner is minimal. In this case, because the inventions are distinct for the reasons given above and thus, the search required for selected group I may not be required for groups II-IV and the restriction for examination purposes as indicated is therefore proper.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Objections***

2. Claim 1 is objected to because of the following informalities: the recitation of “the substrate” in line 3 lacks proper antecedent basis. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the

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reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-10, and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Hofer et al (U.S.Pat. 6,828,772).

With respect to claims 1, 8, and 15, Hofer et al discloses a lithographic support system (5) comprising all structures set forth in the instant claim such as: a moveable support structure (20, 60) to support and move a substrate (40) the support structure comprising a clamp (60) for clamping the substrate (40) and a drive wheel edge assemblies (50, 55) can be regarded as a compliant structure for rotating the substrate to compensate for at least one of a tilt and displacement between the substrate (40) and the clamp (60).

As to claims 2, and 16, Hofer teaches the support structure (5) comprises a robot arm (see figure 6) having a support frame (60) for holding the substrate (40).

As to claims 3, 9, and 17, Hofer et al discloses a rod (20) coupled to the support frame, and the rod comprising the compliant structure.

As to claim 4-5, Hofer et al discloses the support frame (60) comprises the compliant structure and the compliant structure (50, 55) provided on the clamp (60).

Regarding claim 6, Hofer et al discloses that the support frame is in a plane defined by a x-axis, and a z-axis being perpendicular to the x-axis and the y-axis, the compliant structure providing a compliance in at least one of the first rotation about the x-axis, a second rotation about the y-axis, and a z-direction parallel to the z-axis (see col.4, lines 46-67 and col.5, lines 19-50).

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As to claim 7, Hofer et al discloses the compliant structure is arranged such that the support frame (60) is allowed to rotate about a predetermined center of rotation (see col.5, lines 25-30).

As to claim 10, Hofer et al discloses the compliant structure having a metal flexure (see figure 6A).

5. Claims 1-10, and 15-18 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Segers et al (U.S.Pat. 6,404,483).

With respect to claims 1, 8, 15, 18 and 21, Segers et al discloses a lithographic apparatus and corresponding method (see figure 1) comprising all structures set forth in the instant claims such as: a radiation system (LA) configured to provide a beam of radiation; a support structure (MT) for supporting a patterning device (M); a substrate holder (WT) for holding a substrate (W); a projection optical system (PL) for projecting the patterned formed on the patterning device onto the substrate; and a support system for holding and moving one of the substrate, the patterning device; the support structure (see figure 5A) having a clamp (134) for clamping the substrate (W) and a compliant structure (131) for rotating the substrate to compensate for at least one of a tilt and displacement between the substrate (W) and the clamp (134).

As to claims 2, and 16, Segers teaches the support structure (130) comprises a robot arm (see figure 5A) having a support frame (133) for holding the substrate (W).

As to claims 3, 9, and 17, Segers et al further discloses a rod (131) coupled to the support frame (133), and the rod comprising the compliant structure.

As to claim 4-5, Segers et al discloses the support frame (133) comprises a compliant structure (135a) provided on the clamp (see figure 5B).

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Regarding claim 6, Segers et al discloses that the support frame is in a plane defined by a x-axis, and a z-axis being perpendicular to the x-axis and the y-axis, the compliant structure providing a compliance in at least one of the first rotation about the x-axis, a second rotation about the y-axis, and a z-direction parallel to the z-axis (see figures 5A-6B).

As to claim 7, Segers et al discloses the compliant structure is arranged such that the support frame (133) is allowed to rotate about a predetermined center of rotation (see col.7, lines 7-8).

As to claim 10, Segers et al discloses the compliant structure having a metal flexure (135a).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 8-10, 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (U.S.Pat. 6,559,928) in view of Akiyama et al (U.S.Pat. 4,788,577).

With respect to claims 1-5, 8-10, 15-21, Aoki discloses a lithographic apparatus (100) and corresponding method, comprising substantially all of the limitations of the instant claims such as: a radiation system (see col.14, lines 25-27) configured to provided a beam of radiation (IL); a support structure (see col14, lines 30-31) configured to support a patterning device (R) that imparts a desired pattern onto the beam of radiation; a substrate holder (12) for holding a

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substrate; a projection optical system (PL) for projecting the pattern formed on the patterning device onto the substrate; a support system (20) that holds and moves one the substrates, the patterning device and an object the support system comprises: a robot arm having a support frame (23) for holding the substrate (P), a rod (see figure 1) coupled to the support frame (23).

Aoki does not expressly disclose “a compliant structure” as claimed. Akiyama et al discloses an exposure apparatus having a moveable support structure for supporting and moving a substrate.

The moveable support structure having a clamp for clamping the substrate and a compliant structure (18) for compensating for at least one of a tilt and displacement between the substrate and the clamp (see figure 6). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Aoki and Akiyama et al to obtain the invention as specified in the above mentioned claims of the present invention. It would have been obvious to a skilled artisan to employ the compliant structure/metal flexure (18) as taught by Akiyama into the support system of Aoki for at least the purpose of compensating the tilt and displacement between the substrate and clamp and whereby the substrate is held and transported precisely.

#### ***Prior Art Made of Record***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Babbs et al (U.S.Pat. 6,326,755) and Kida et al (U.S.Pat. 6,577,382) are cited for their teachings of substrate transporting devices.



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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V. Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Hung Henry V Nguyen**  
**Primary Examiner**  
**Art Unit 2851**

hvn  
2/10/06